

Insect Control - Modoc
Badger Springs Unit

Alturas, California
January 23, 1933

REPORT
ON
BADGER SPRINGS INSECT CONTROL PROJECT
Season
1932 - 1933
U. S. Forest Service
and
Pickering Lumber Company
Cooperating

Junior Forester

Alvin T. Parker
U.S. Forest Service

Foreman

Ernest Buck
Pickering Lumber Company

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January 31, 1933

From the beetle cruise of the Badger Springs Unit, made by the U. S. Bureau of Entomology in the fall of 1932, it was found that the area was in an epidemic condition and in need of immediate insect control measures. As a result of these findings an area was recommended for treatment involving approximately 44,000 acres. Of this amount, 23,400 acres were Government land and 20,600 acres were Pickering Lumber Company lands, all of which was located in Townships 43 and 44 N., Ranges 7, 8 and 9 E., M.D.M. This area is indicated on the enclosed map. It is practically pure Ponderosa Pine and the Western Pine Beetle the principle insect requiring control.

On a basis of the recommendations of the Bureau of Entomology, the U. S. Forest Service allotted \$12,000 toward the project and control operations were started on December 1, 1932 using the camp of the Pickering Lumber Company as a base of operations. It was planned to continue the work through most of the winter months and perhaps increase the capacity of the camp and employ a larger number of men. There was no definite assurance then, that the Pickering Lumber Company would allot money for insect control but it was known that they were favorably inclined toward the project and were trying to raise the money. With this in view and the possibility of better weather and better road conditions, which are usually prevalent during the early months of the winter season, it was decided to increase the capacity of the camp to seventy men to assure the completion of the work during this best available weather. While this additional camp space was being provided, definite word was received that the Pickering Lumber Company was joining the control project with \$10,000 which then made a total project fund of \$22,000.

With the assurance that this extra amount of money had been secured all possible haste was made to build up and train the crew to a maximum number. However, the crew had not reached this limit until the first of January 1933. Extreme cold weather was encountered between December 10 and 12 resulting in a heavy kill of beetles and as a result the work was closed down on January 7. A detailed report regarding the effects of the freeze on the insects has been made by Dr. E. A. Salman of the Bureau of Entomology.

From his report we note the minimum temperatures at the camp on the nights of December 10, 11 and 12 were -18, -19 and -18. Laboratory tests had shown that the western pine beetle is killed at temperatures between -5° and -10° inside the bark. As a result of this rather long period of extreme cold, steps were immediately taken to determine its effect on the pine beetle broods. Broods were examined in a number of trees on which the treaters were working and other standing trees and samples were taken from 133 trees for more careful

examination at the Berkeley Laboratory. Here it was found that approximately 65% of the western pine beetles had been killed, the heaviest loss being in the parent adults and larvae, the eggs showing only a 45% mortality. The kill was estimated to be practically as effective as control work because in all control operations there are always a certain number of trees missed and there is always more or less infiltration from adjoining areas, unless there is a barrier of some sort to prevent it. Such a barrier does not occur in the vicinity of the project at Hackamore and there was a notable reinfestation, particularly on the south and west sides of the controlled area of last year.

It was not felt that the freeze resulted in complete control, as the 35% remaining are sufficient for the foundation of a new epidemic, providing climatic and other conditions are favorable for the development of the insects.

It was found on examination that there was probably a higher mortality of predacious insects than of western pine beetle, and perhaps a lower mortality of other insects that contribute to the death of trees. This latter group, however, comprised only a small percent of the total insect population. Birds will be concentrated on a smaller number of insects which may effect control to a further extent. There are several other species of pine beetles which have done damage to the Ponderosa Pine stand in this area, but have given no serious trouble. From Dr. Salman's report, we note the relative percentage of these other insects as compared to the Western Pine Beetle to be as follows:

<u>Insects</u>	<u>Percent total infestation</u>
Miscellaneous insects, mostly mountain pine beetle and flathead borers -----	19.7
Dendroctonus brevicornis all stages of development -----	80.3

These results were on a basis of 430 tree record forms examined on this job.

CONTROL METHODS USED

Practically the same methods were followed in this work that were used in past work on this area. A regular 100% strip cruise was made in the spotting of the bug trees, and the treating was accomplished by the peeling and burning process. A four-man spotting crew, consisting of one compassman, and three "spotters" located the beetle-infested trees on a ten chain strip across the section covering an average of 320 acres each day. Two and three-man units were used in each treating crew, but for the most part a two-man crew was preferred. All men were hired by crews, and usually released by crews.

In view of a comparison of the two and three-man treating crew, the following comments are made: The three-man crew, if all are good workers, can be very effective, but if any member of the crew is not functioning effectively the amount of work per man day may only be comparable to a two-man crew. In cases where there are two and more trees in a group the time of the third man may be partially lost while the group of trees are being felled. This third man can be chopping the "under cuts" and gathering pitch for the burning process

but quite often he fails to take advantage of the opportunity. After the trees are felled and peeled, this third man may be left to do the burning. On the two-man crew, both men can start the burning on opposite sides of the log, and have it burned nearly twice as soon as the third man working alone. With the two-man crew there need not be any lost motion on account of waiting on the other fellow. A considerable difference usually obtains between the men themselves and if one man is unsuited for the work, it is easier to check up on him, when in a two-man crew than when in a three-man crew. It is the usual thing for men to work in pairs but, when hired as a crew of three, the one man quite often does not fit in. It may seem to be a trifling matter to fire a man but there is an additional cost in breaking in a new crew, for it takes from two days to a week for them to reach their best efficiency. Obviously, only a small amount of supervision can be given the crews because of their being spread over a wide area, they must go ahead for the greater part of a day on their own initiative and when all points are considered, it appears that the balance swings in favor of the two-man crew.

A 15 H.P. Cletrac tractor equipped with a blade in front, known as a "bull dozer" was used very effectively in making new roads through parts of the area. In one instance this machine and an extra man completed two miles of road in one day. By way of comparison, it took four men two days to build an equal amount of road, which was not nearly as good as the one made by the tractor. This road construction served to simplify the transportation problem to a great extent as well as to reduce the distance the crews had to walk to their work.

The abrupt termination of this project just as the crews were obtaining a high degree of efficiency meant an abnormally high cost figure. The exact final figure is not yet available, but will be approximately \$6.10 per M board feet. This cost includes slightly over \$1,000 spent on extending the size of the camp, building roads, constructing a garage, installing camp sanitation conveniences, overhauling of a truck for emergency use, cutting wood, and losses in the cookhouse of broken packages and perishable groceries. It is felt that if the job could have continued, the cost would have been approximately \$4.00 per M board feet. On a basis of the last six and one-half days of work, with an eight day overhead included, the cost per M board feet, was \$5.90. This should indicate the results that could have been expected had the work continued through the winter months, as it was originally planned.

BASIS OF COOPERATION

When the Pickering Lumber Company joined the project, an agreement was executed with the U. S. Forest Service, whereby, the entire amount of money was placed in the hands of the Forest Service, and all expenditures chargeable to the project fund, vouchered by them. The actual "set-up" of the project funds was as follows:

Pickering Lumber Company	:	U. S. Forest Service	:	Total
\$10,000	:	\$11,000	:	\$21,000

An additional \$1,000 allotted by the Forest Service was set aside as a separate fund, for the purpose of purchasing necessary equipment for the job. To deal on an equitable basis with the Pickering Lumber Company, it was necessary to handle it in this manner, since all equipment purchased automatically became property of the Government. Of this fund, \$184.50 was spent.

ORGANIZATION OF CONTROL WORK

This work was handled entirely by the Forest Service. However, the services of Mr. Ernest Buck of the Pickering Lumber Company were secured, and he worked on an equality basis with Alvin Parker, of the Forest Service. While Mr. Buck was paid by the Forest Service, he represented the Pickering Lumber Company in seeing the provisions of the agreement were carried out and acted as foreman of a portion of the crews in the woods.

With the large number of men, it was necessary to run two trucks with 25 man capacity each. The services of another man to act as foreman of the extra truck crew was secured. Mr. Otis Buck, an experienced "bug man" was employed in this capacity.

The general supervision of all activities was left to Mr. Parker. Insofar as possible, all matters of importance to both parties were discussed with Mr. Ernest Buck prior to action. All work was progressing smoothly when the job was abruptly ended.

The wage paid for treating labor was \$3.00 per day less \$1.00 for board, while for spotting, truck driving and saw filing the wage was \$4.50 per day less \$1.00 for board. There was an additional 8-1/3% reduction on all wage rates except the \$3.00 group. This reduction had to be made to comply with the Economy Act passed by Congress in 1932.

AMOUNT OF WORK ACCOMPLISHED

Spotting Results								
Number of Trees			Volume Spotted			Acres Spotted		
Pickering	U.S.	Total	Pickering	U.S.	Total	Pickering	U.S.	Total
491	1248	1739	410,090	1145760	1555850	3040	10400	13440

There were 21 sections spotted, which showed an average of 82.8 infested trees per section.

TREATING RESULTS

Number of Trees			Volume Spotted			Acres Spotted		
Pickering	U.S.	Total	Pickering	U.S.	Total	Pickering	U.S.	Total
288	927	1215	255,600	806,710	1,062,310	1880	7040	8920

Of the above 21 sections, approximately 14 sections were treated which showed the following averages:

Number of trees per section ----- 87.2-
 Diameter per tree ----- 26.4/
 Number of logs per tree ----- 8.8
 Volume per tree ----- 874 bd.ft.

In comparing these averages with those of the 1931-32 project for this area, we note that the volume per tree for this project was only 874 bd. ft. in the '32-'33 project, or a decrease of 26%. This would tend to make the cost per M bd. ft. higher than for that of last year, other things being equal.

Approximately 76% of the total volume treated was on Government lands and 24% on Pickering lands. The final settlement of project funds was on a basis of the volume treated on the lands of each party which was in accordance with the executed agreement.

COST OF WORK					
Salaries & Wages (All Workers)	Subsistence Supplies (Food only)	Transportation	Other	Total	
Gross : Board : Net :					
5633.24 : 1596.96 : 4036.28 :	1,481.42	414.80	504.03	6436.24	
Cost per man Day 2.52 :	.8073*	.259	.506	4.01	

* Figured on a basis of 5502 meals eaten
 Remainder figured on a basis of 1601 man days of labor

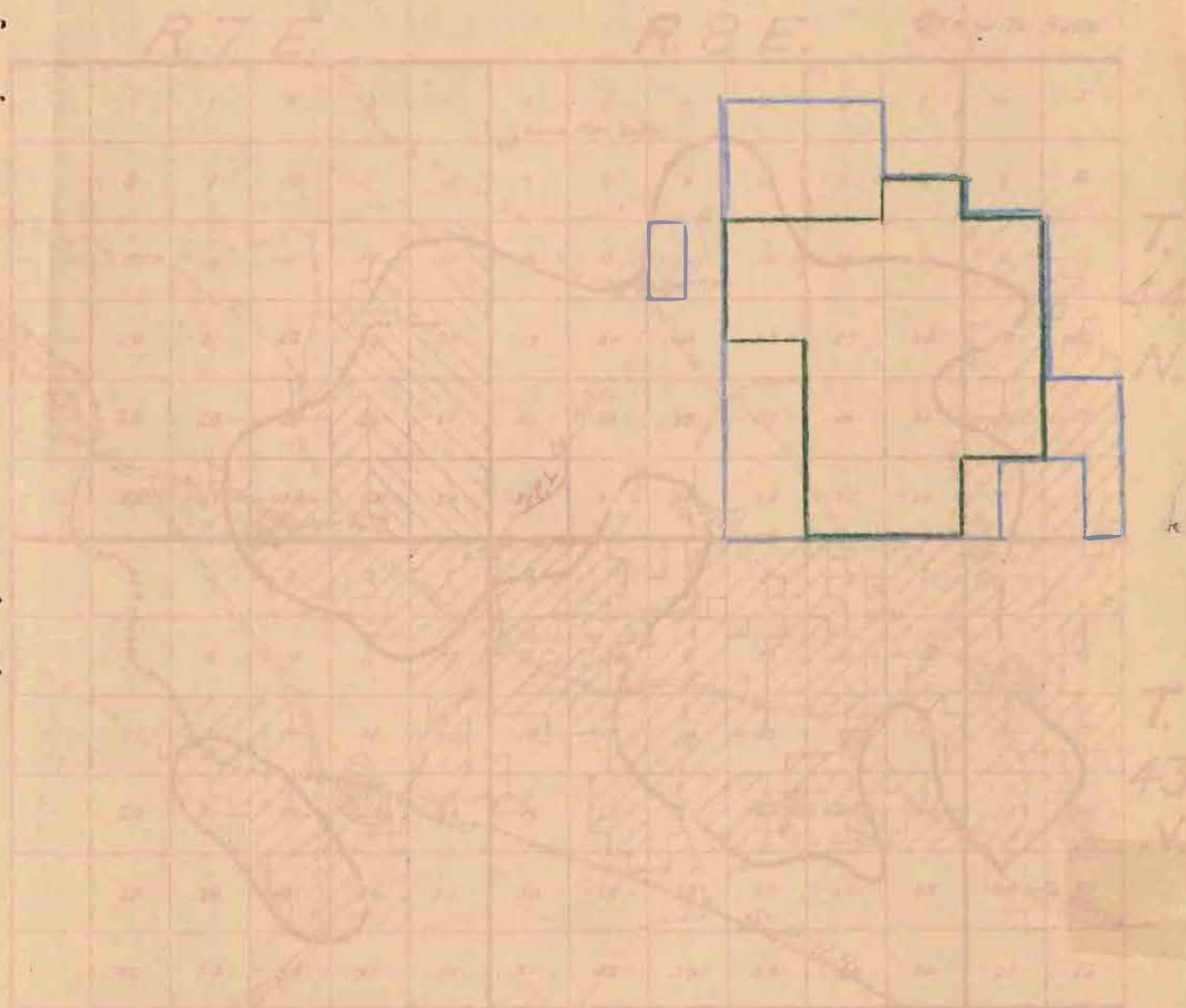
AVERAGE COSTS:

Cost per tree spotted (Labor only)	.302-
" " M bd. ft. spotted (labor only)	.337/
" " Acre spotted (labor only)	.039/
" " man day spotting (labor only)	3.30/
" " tree treated	5.297/
" " M bd. ft. treated	6.058/
" " Acre treated	.722
" " man day of total labor	2.52/

(Pickering Lumber Co. percent approximately 24%)
 (U. S. Government " " 76%)

LABOR AND COST DISTRIBUTION

PROJECT COSTS				CONTRIBUTED COSTS				GRAND TOTALS			
	: Gross	: Board	: Net	: Man-days	: Cost per: man-day	: Man-days	: Amount	: Cost per: man-day	: Man-day	: Amount	: Cost per: man-day
Supervision and Accounting (Salaries and Expenses)	: \$704.67	: \$ 35.17	: \$669.70:	107	: \$6.07	90	: \$261.50:	\$5.63	197	: \$931.20	: \$5.93
Subsistence, (Salaries and supplies)	: 2044.43	: 159.74	: 1884.69:	178½	: 10.55-						
Spotting, (Wages only)	: 715.50	: 190.67	: 524.83:	159	: 3.30½						
Treating, (Wages only)	: 2571.00	: 932.95	: 1638.05:	857	: 1.91½						
Transportation, (Wages and supplies)	: 945.80	: 105.49	: 840.31:	124	: 6.78-						
Equipment, (Wages and supplies)	: 700.67	: 38.50	: 662.17:	92	: 6.65-		: 150.00:		92	: 762.17	: 8.28½
Miscellaneous, (Wages and supplies)	: 198.80	: 31.75	: 166.45:	48	: 3.47-						
Non-Effective, (Wages and supplies)	: 62.52	: 13.68	: 48.84:	16½	: 2.96						
Bureau of Entomology, (Wages, Research)	: 91.20	: 19.00	: 72.20:	19	: 3.80						
TOTAL	: \$8054.19:	\$159.69	: \$6437.24:	1601	: \$ 4.01		: \$431.50:			: \$1695.37:	



PICKERING DATE AREA
 BEETLE CONTROL PROJECT
 1932-1933

LEGEND
 [Shaded Area] Pickering Date Area
 [Blue Outline] Area Completely Treated 1932-1933
 [Diagonal Lines] Area Spotted

Sections 10, and 11, T. 44 N., R. 8 E., and Sec. 29. T. 44 N., R. 9 E. Partially treated 1932-1933.

Complete Ownership shown only within boundary of beetle infested area.